

ABSTRACT

A Cable Modem Termination System (CMTS) is partitioned into Line Cards, I/O Cards, and a midplane to provide enhanced Reliability, Availability, and Serviceability. Each I/O Card provides a cabling interface for coupling an assigned Line Card to other portions of a Hybrid-Fiber-Coax Network. A plurality of RF signals is coupled via connectors between each Line Card and a corresponding I/O Card, via the midplane. This permits a Line Card to be removed for servicing without requiring recabling of the corresponding I/O Card. Preferably, a rectangular-multi-pin collinear connector-cascade (Line Card jack, midplane double-plug, and I/O Card jack) is used to couple the plurality of RF signals. The connector-cascade is configured with protective RF ground pins adjacent and surrounding each of a plurality of RF signal pins. This approach permits each Line Card to be removed or inserted in a single action, without attention to individual RF interconnects, yet meets all system RF requirements while using relatively inexpensive connectors. The I/O Cards preferably include a distributed backup bus that permits one of the Line Cards in the CMTS to serve as a designated backup. The backup bus enables assignment of the designated backup Line Card to the I/O Card associated with a failing Line Card, without requiring recabling of any I/O Card. In conjunction with a signal processing architecture that permits dynamically programmable channel assignments, the backup bus facilitates rapid and fully automated failover. The Line Cards are preferably further partitioned into easily replaceable sections, including IF-to-RF and signal processing modules.